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System and Method for Providing Output

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[Title of the Invention] SYSTEM AND METHOD FOR PROVIDING OUTPUT

[Claims]

[Claim 1]

An output providing system for providing a tangible output in response to a request from a customer, the system comprising:

Wireless data transmitters capable of generating and transmitting output-related data;

a data receiver capable of receiving the data transmitted from the wireless data transmitters; and

an output producing device that produces the output based on the data received by the data receiver.

[Claim 2]

The output providing system according to claim 1, wherein the wireless data transmitters are identified using an identification number assigned to each of the wireless data transmitters.

[Claim 3]

The output providing system according to claim 1 or 2, wherein the data transmitted from the wireless data transmitters includes personal information.

[Claim 4]

The output providing system according to any one of claims 1 through 3, wherein the data receiver is a wireless receiver.

[Claim 5]

The output providing system according to any one of claims 1 through 4, wherein the output producing device is capable of producing a stamp.

[Claim 6]

An output providing method for providing a tangible output in response to a request from a customer, the method comprising the steps of:

generating output-related data;

transmitting over the air the output-related data;
receiving in a data receiver the data transmitted
over the air; and

producing the output, based on the received data,
using an output producing device.

[Detailed Description of the Invention]

[0001]

[Technical Field]

The present invention relates to a system and method
for providing a tangible output, such as a stamp and a
name card, in response to a request from a customer.

[0002]

[Prior Art]

In recent years, amusement facilities, such as a
game arcade and an amusement park, are often provided
with a name card producing device that produces a name
card on which personal information including a customer's
name and address is printed, a stamp producing device
that produces a stamp by engraving an image on a stamp
material based on personal information, and a sticker
producing device that produces a peel-off sticker based
on image data obtained by taking a picture of a
customer's face. Such devices are increasingly popular
because, in many of such devices, an original cartoon
character of the amusement park or a commonly popular
cartoon character can be printed or engraved together
with the personal information, and because a name card
and a stamp are provided in a short time and at low cost.

[0003]

[Problems to be Solved in the Invention]

Under present circumstances, when a customer uses
the above-described card or stamp producing device, the
customer must go to a site where a desired device is
installed and operate the device to enter data, or fill
out a predetermined order form and submit it to an
administrator of the device.

[0004]

However, going to the installation site of a desired device is troublesome for the customer. In addition, it is relatively time-consuming to enter data into the desired device or fill out an order form. When many customers queue up for the desired device, they must wait for their own turn. Thus, a drawback of such a device is that it takes a very long time to get a desired name card or the like. Another drawback of such a system is that when the customer fills out an order form, the device manager must take the trouble to enter data based on the items entered in the order form.

[0005]

Accordingly, it is an object of the present invention to provide an output providing system and method that enables a customer to order a tangible output, such as a name card or a stamp, at less expense in time and trouble and that can save an output provider time and trouble.

[0006]

[Means for Solving the Problems]

To achieve the above-described object, an output providing system according to claim 1 includes, in order to provide a tangible output in response to a request from a customer, wireless data transmitters capable of generating and transmitting output-related data, a data receiver capable of receiving the data transmitted from the wireless data transmitters, and an output producing device that produces the output based on the data received by the data receiver.

[0007]

An output providing method according to claim 6 includes, in order to provide a tangible output in response to a request from a customer, the steps of generating output-related data, transmitting over the air the output-related data, receiving in a data receiver the

data transmitted over the air, and producing the output, based on the received data, using an output producing device.

[0008]

According to claims 1 and 6, when a customer wants a desired output to be produced, all the customer has to do is to send desired data using a personal wireless data transmitter without taking the trouble to go to the installation site of the output producing device and enter data to be indicated in the output or fill out a form. Accordingly, the time and trouble taken by the customer to order an output can be substantially saved. Also, production of an output based on the data transmitted from the customer substantially saves an output provider the trouble of entering data and enables the stamp provider to smoothly receive orders from distant consumers.

[0009]

Because the output-related data is generated and transmitted using a wireless data transmitter, the customer can order an output conveniently from various locations, at home and away from home, in his/her spare time.

[0010]

In the output providing system of claim 2, the wireless data transmitters are identified using an identification number assigned to each of the wireless data transmitters. According to claim 2, the sender's wireless data transmitter can be easily identified from the received data.

[0011]

In the output providing system of claim 3, the data transmitted from the wireless data transmitters includes personal information. According to claim 3, an output such as a name card can be produced based on the operator's name, address, and telephone number.

[0012]

In the output providing system of claim 4, the data receiver is a wireless receiver. According to claim 4, the installation site of the data receiver can be selected more freely and the environment for the data receiver to receive data can be built at a lower cost.

[0013]

In the output providing system of claim 5, the output producing device is capable of producing a stamp.

[0014]

[Embodiment]

Preferred embodiments of the invention will now be described with reference to the accompanying drawings.

[0015]

According to a first embodiment of the invention, a stamp providing system is provided which produces a stamp from a thermoplastic porous material in response to a request from a customer. Referring now to FIG. 1, a general configuration of the stamp providing system according to the embodiment will be described. FIG. 1 is a schematic block diagram of the stamp providing system according to the embodiment.

[0016]

In the stamp providing system 1 shown in FIG. 1, a stamp producing device 19 located distant from a number of consumers (customers) (only four consumers 11a-11d are shown here by way of example) produces a stamp 20, based on stamp producing data transmitted over the air from cellular phones 12a-12d, which are portable wireless data receivers/transmitters owned by the respective consumers. The cellular phones 12a-12d used in this embodiment have, in addition to a function of receiving/transmitting voice as digital (or analog) signals, a function of receiving/transmitting text data as code data from/to other computers and cellular phones (for example, a message receiving/transmitting function and an e-mail

receiving/transmitting function using the Internet, which are provided by each cellular phone company).

[0017]

Text data sent from the cellular phones 12a-12d is sent to a host computer 18 connected to the stamp producing device 19 in the form of e-mail. The text data contains, as will be described later, data to be engraved on a stamp material of the stamp 20. The e-mail containing textual information and sent from the cellular phones 12a-12d as digital signals is sent from a base station 13 of each cellular phone service company to a public line switching station 15, via a cellular phone switching station 14. The e-mail is converted into analog signals at any one of these stations and sent, via a public line, to a modem 17 connected to the host computer 18. Then the e-mail is converted from analog to digital signals and received by the host computer 18.

[0018]

The host computer 18, as will be described in detail later, edits stamp face data for producing a stamp, based on the contents of the received e-mail. The edited data is sent to the stamp producing device 19. The stamp producing device 19 optically engraves an image on a stamp material based on the data sent from the host computer 18 and produces the stamp 20 having a desired stamp face.

[0019]

In this embodiment, each cellular phone 12a-12d constitutes a wireless data transmitter, the host computer 18 constitutes a data receiver, and the host computer 18 and the stamp producing device 19 constitute an output producing device.

[0020]

Referring now to FIGS. 2 and 3, the structure of the stamp producing device will be described. FIG. 2 is a general perspective view of the stamp producing device

shown in FIG. 1, and FIG. 3 is a general cross-sectional view thereof. The stamp producing device 19 has a film magazine 24 removable from a device body 22 and storing a plurality of transparent original films 23, a supply port 25 disposed near the film magazine 24 for supplying cut sheets CS for stamp ID labels, a print unit 27 provided with a printhead 26, a stamp unit 29 for forming a stamp face, based on a printed original film 23, on a stamp material (not shown) disposed at a lower surface of the stamp body 28, a stamp storage 30 for storing the stamp body 28 during stamp face forming, and a discharge port 31 disposed near the stamp unit 29 in the device body 2 for discharging the cut sheets CS and the original films 23.

[0021]

A head holder unit 32, provided on an upper surface of the print unit 27, has at its lower side a thermal head 26 and is upwardly pivotable about a shaft 33, thereby allowing maintenance of the inside of the device. A leading edge of the uppermost original film 23 on the film magazine 24 is pressed into contact with a supply roller 34. When the supply roller 34 is rotated in this state, the original film 23 is properly fed to the print unit 27. The cut sheet CS is fed to a position printable by the thermal head 26 by a pair of feed rollers 35, 36 immediately behind the supply port 25, a sheet guide 37 provided immediately behind the supply port 25 so as to be bent toward the thermal head 26, and a guide rail 38.

[0022]

The print unit 27 is provided with a supply roll 40 and a take-up roll 40b of thermal transfer ribbon 39 covered with wax base ink. A platen 42 is provided below the thermal head 26 disposed at the lower side of the head holder unit 32. Provided below the supply roll 40a are the guide rail 38 for guiding the original film 23 and the cut sheet CS to a space between the thermal head

26 and the platen 42, and a presser guide 43 for preventing the original film 23 and the cut sheet CS from floating while being fed. In addition, provided downstream of the thermal head 26 are a transport guide 44 and a pair of supply rollers 45.

[0023]

A light-emitting unit (HU) 49 provided with a xenon tube 48 enclosed by a reflector box 47 is removably provided below the stamp unit 29. The light-emitting unit 49 with a stage 50 for holding thereon the stamp body 28 is removable from the stamp producing device 19 by upwardly sliding a slide lever 51. The stamp unit 29 is also provided with a top cover 52 and a front top cover 53, which are opened/closed for replacement of the stamp body 28.

[0024]

The stamp producing device 19 is connected to the host computer 18 via a cable and executes, under the control of the host computer 18, various operations, such as printing a positive image on the original film 23, printing an ID label on the cut sheet CS, and engraving an image on a stamp material based on the original film 23 with a positive image printed thereon.

[0025]

More specifically, the thermal head 26 prints a positive image composed of predetermined letters or the like on the original film 23, which has been fed from the film magazine 24 to the print unit 27, and the printed original film 23 is fed to the stamp unit 29. Then the light-emitting unit 49 irradiates the stamp material disposed under the stamp body 28 with light through the original film 23 to engrave the image on the stamp material. In this way, a series of stamp producing operations by the stamp producing device 19 is completed.

[0026]

For printing on the cut sheet CS, a positive image including letters and graphics is printed by the thermal head 26 on the cut sheet CS fed from the supply port 25, instead of the original film 23, and the printed cut sheet CS is discharged from the discharge port 31. The cut sheet CS may be pasted to the stamp body 28 as an ID label.

[0027]

The structure of a stamp material disposed under the stamp body 28 will now be described. The stamp material used in this embodiment has a double-layer structure, as disclosed in Japanese Laid-Open Patent Publication No. 11-78191, which belongs to the applicant of the present invention. The lower layer is made of a soft porous resin (such as urethane resin) in which a light energy-absorbing material, such as carbon black, is dispersed. The upper layer is made of a hard porous resin (such as polyvinyl formal) in which ink is stored and to which a uniform pressure is applied.

[0028]

Upon selective irradiation of such a stamp material, when it is compressed, with light via the transparent (positive) original film with a positive image printed thereon, a portion in the lower layer, which corresponds to a transparent portion of the original film, is melted by heat generated from the light energy-absorbing material and then hardened and sealed as an ink unpermeable portion. On the other hand, a portion in the lower layer corresponding to a printed portion of the original film is not irradiated with light nor melted/hardened by heat transmitted from the printed portion, and remains unsealed corresponding to letters or the like on the original film. As a result, a stamp having, on the lower surface of the stamp material, a desired pattern composed of a sealed portion (not to be

printed) and an unsealed portion (to be printed) is formed.

[0029]

Referring now to FIG. 4, a control system of the stamp providing system 1 according to the embodiment will be described. FIG. 4 is a block diagram showing a control system of the stamp providing system 1. In FIG. 4, only one (cellular phone 12a) of a number of cellular phones usable in the stamp providing system in this embodiment is representatively shown, and connection between the cellular phone 12a and the host computer 18 is omitted from the figure.

[0030]

As shown in FIG. 4, the cellular phone 12a has a CPU 61, a ROM 62, a RAM 63, a DSP (digital signal processor) 64, a wireless unit controller 65, and an I/O interface 66. These devices are connected to each other using a bus 67. The ROM 62 is a rewritable nonvolatile solid-state memory, such as a flash memory, for storing a cellular phone operation program, a kana-kanji conversion program, and other programs. The RAM 63 is a volatile solid-state memory for storing text data and messages composed by a consumer.

[0031]

The DSP 64 is a voice processor connected to a microphone 68 and a speaker 69 via an A/D and D/A converters (not shown). The wireless unit controller 65 controls operation of a wireless unit 70 connected thereto based on signals from the CPU 61. The wireless unit 70 transmits over the air desired voice data and text data, as digital signals, to a base station via an antenna 71. Conversely, the wireless unit 70 is also used for receiving data transmitted from the base station via the antenna 71.

[0032]

Connected to the I/O interface 66 are an operation unit 72 including numeral keys and a call key, and a display 73 on which numerals and letters inputted from the operation unit 72 or received by the wireless unit 70 are displayed. By operating the operation unit 72, an operator of the cellular phone 12a can create an arbitrary letter string including kana, kanji, numerals, and symbols. Then data of the created letter string as well as an identifier used for identifying an individual cellular phone (for example, a phone number of the cellular phone 12) is transmitted to the host computer 18 via the base station 13.

[0033]

The host computer 18 has a CPU 81, a ROM 82, a RAM 83 and an I/O interface 84. These devices are connected to each other using a bus 85. Connected to the I/O interface 84 are a hard disk 86, a keyboard 87, a display 88, and a modem 17.

[0034]

The display 88 displays a screen for editing e-mail received from one or more cellular phones, a stamp face generating screen including a stamp face image to be engraved by the stamp producing device 19, and other screens. The keyboard 87 is connected as part of an input device and, other than the keyboard 87, a pointing device such as a mouse may be connected.

[0035]

The hard disk 86 magnetically stores a mail editing program for editing mail received from the cellular phones, a program for exchanging data with the stamp producing device 19, and other programs. The RAM 83 temporarily stores programs read from the hard disk 86, received mail, and data entered from the keyboard 87. The RAM 83, as will be described later, is provided with name buffers 0-2, address buffers 0-2, a stamp type buffer, and a memory area for various pointers.

[0036]

The stamp producing device 19 is provided with a CPU 91, a ROM 92, a RAM 93, and an I/O interface 94. These devices are connected to each other using a bus 95. The I/O interface 94 is connected to the I/O interface 84 of the host computer 18 via a cable or the like. This allows the stamp producing device 19 to retrieve stamp face data edited according to the embodiment from the host computer 18. Also connected to the I/O interface 94 are a head driving circuit 96 and a motor driving circuit 97. A thermal head 26 is connected to the head driving circuit 96, while motors 98 variously located at the stamp producing device 19 for driving the thermal head 26 and various rollers are connected to the motor driving circuit 97.

[0037]

The ROM 92 stores a control program for controlling the entire operation of the stamp producing device 19. The RAM 93 stores stamp producing data provided from the host computer 18. The RAM 93 is provided with an image buffer for storing dot matrix data generated based on the stamp producing data.

[0038]

The CPU 91 controls the head driving circuit 96 and the motor driving circuit 97 based on the control program stored in the ROM 92 and the dot matrix data stored in the image buffer of the RAM 93. Thereby a desired stamp face image is printed by the thermal head 26 on the original film 23 or the cut sheet CS, and the original film 23 is used for engraving the face image on a stamp material.

[0039]

Referring now to FIGS. 5 through 17, stamp providing steps in the stamp providing system 1 according to the embodiment will be described. FIG. 5 is a main flowchart showing steps for providing a stamp according to this

embodiment. FIG. 6 is a flowchart showing an e-mail editing process in the host computer 18. FIG. 7 is a flowchart showing a stamp type retrieving subroutine in the e-mail editing process of FIG. 6. FIG. 9 is a flowchart showing a name retrieving subroutine in the e-mail editing process of FIG. 6. FIG. 10 is a flowchart showing an address retrieving subroutine in the e-mail editing process of FIG. 6. FIG. 11 is a flowchart showing a buffer laying-out subroutine in the e-mail editing process of FIG. 6.

[0040]

FIG. 12 shows an example of a brochure to be supplied previously to consumers. FIG. 13 shows an example of transmission data displayed on the display of the cellular phone. FIG. 14 shows a screen of mail editing software displayed on the display of the host computer 18. FIG. 15 shows a difference, in name and address buffer layouts, between the two types of stamp face designs. FIG. 16 shows an example of a stamp face layout produced according to the embodiment. FIG. 17 is an external perspective view of a stamp produced according to the embodiment.

[0041]

First, in step S1, consumers 11a-11d operate the operation unit 72 of the respective cellular phones 12a-12d to create e-mail containing text data for a desired stamp to be produced. The e-mail needs to be composed by following a predetermined rule to facilitate editing by the host computer 18. The rule may be to enter a plurality of entry items by delimiting each entry item by a predetermined symbol (for example, a semicolon (;)). It is preferable to previously supply a brochure 101, as shown in FIG. 2, to consumers to notify them of such an e-mail composing rule.

[0042]

In this embodiment, two entry items, for example, a name and an address (of either a consumer who operates a cellular phone or another person) are provided, and these two entry items are engraved based on a design selected by the consumer from two types of designs featuring different cartoon characters. Thus, the e-mail composed in this embodiment contains three entry items, namely, the stamp type, entry item 1 (for example, a name), and entry item 2 (for example, an address).

[0043]

Accordingly, in the brochure 101 shown in FIG. 12, the e-mail composing rule, two types of stamp face designs, an exemplary entry of e-mail, a stamp face sample produced based on the e-mail, and a telephone number (or e-mail address) of an e-mail recipient are printed. The contents of the composed e-mail are stored in the RAM 63 as text code data and displayed, as shown in FIG. 13, on the display 73 of the cellular phone 12a.

[0044]

Then in step S2, the consumer 11a presses a mail transmission button of the cellular phone 12a to transmit the e-mail composed in step S1 to the host computer 18. At this time, the cellular phones 12a-12d must be located within a service area covered by the cellular phone service company. During composition of e-mail in step S1, however, the cellular phones are not necessarily required to be located within the service area, and the consumer, if he/she has a cellular phone, can compose e-mail for ordering a stamp at anytime and anywhere.

[0045]

Then in step S3, the host computer 18 receives the e-mail transmitted from the cellular phones 12a-12d. The received e-mail is stored in the RAM 83 of the host computer 18. Each piece of e-mail received by the host computer 18 preferably includes in its header text code data representing the cellular phone number of an e-mail

sender, other than text code data representing the stamp type, name, and address entered in step S1. The host computer 18, if provided with the cellular phone number of an e-mail sender, is enabled to perform mail management using a unique cellular phone number and proceed with the subsequent processes smoothly. Also, this prevents a wrong stamp from being delivered later to the consumer. Consumer identifying information such as the cellular phone number may be entered in step S1 by the consumer.

[0046]

In step S3, mail for acknowledging receipt of mail or for notifying of the time of completion of a stamp estimated from the order situations may be returned to the cellular phones 12a-12d of the consumers 11a-11d. This obviates the need for the consumers 11a-11d to wait for the stamp 20 at the place of delivery.

[0047]

Then in step S4, the host computer 18 starts mail editing software installed therein and selects mail to edit from a list of received mail (FIG. 14).

[0048]

Then in step S5, the host computer 18 edits the mail selected in step S4, using the mail editing software as described below. The mail editing process, as shown in FIG. 6, includes five steps, namely, initialization (step S51), retrieval of stamp type (step S52), retrieval of name (step S53), retrieval of address (step S54), and buffer layout (step S55). These steps will be described with reference to FIGS. 7 through 11.

[0049]

In the initialization step (step S51), as shown in step S510 of FIG. 7, a read pointer stored in the RAM 83 of the host computer 18 for indicating a mail read point is moved to the head of the body of the mail to be edited.

[0050]

In the stamp type retrieving step (step S52), the contents of the stamp type buffer in the RAM 83 are cleared in step S520, as shown in FIG. 8. Then in step S521, a stamp type buffer write pointer for indicating a data write point in the stamp type buffer is initialized. Then in step S522, the text code data at a point indicated by the read pointer is retrieved from the body of the mail. Then it is determined, in step S523, whether the text code is indicative of a delimiting symbol (for example, a semicolon (;)) for an entry item.

[0051]

When the text code is indicative of a delimiting symbol (S523: YES), control goes to step S524 on the assumption that the stamp type data has already been retrieved. In step S524, it is determined whether the data retrieved and stored in the stamp type buffer is data representing the stamp type ("1" or "2" in this embodiment). As a result, when the data stored in the stamp type buffer is the data representing the stamp type (S524: YES), control goes to step S5241 on the assumption that the data representing the stamp type has been correctly retrieved, and the read pointer is incremented by one and this subroutine is completed. When the data stored in the stamp type buffer is not the data representing the stamp type (S524: NO), control goes to step S526, where error handling is performed.

[0052]

On the other hand, when the text code is not indicative of a delimiting symbol (S523: NO), control goes to step S525 on the assumption that the stamp type has not yet been retrieved. In step S525, it is determined whether the text code retrieved in step S522 is a code suffixed on the body of the mail and indicative of the end of the body of the mail (or whether retrieval of the text code was failed in step S522). When the text

code is determined to be a code indicative of the end of the body of the mail (S525: YES), control goes to step S526, where error handling is performed.

[0053]

When the text code is determined not to be a code indicative of the end of the body of the mail, (S525: NO), the text data retrieved in step S522 is written into the stamp type buffer. Then in the step S528, the read pointer is incremented by one and, in step S529, the stamp type buffer write pointer is incremented by one. After that, control returns to step S522. By repeating these steps, text data indicative of the stamp type ("1" or "2" in this embodiment) is written into the stamp type buffer in the RAM 83 of the host computer 18.

[0054]

In the name retrieving step (step S53), the contents of the name buffer 0 in the RAM 83 are cleared in step S530, as shown in FIG. 9. Then in step S531, a name buffer 0 write pointer for indicating a data write point in the name buffer 0 is initialized. Then in step S532, the text code data at a point indicated by the read pointer is retrieved from the body of the mail. Then it is determined, in step 533, whether the text code is indicative of a delimiting symbol (for example, a semicolon (;)) for an entry item.

[0055]

When the text code is indicative of a delimiting symbol (S533: YES), control goes to step S534 on the assumption that the name data has already been retrieved. In step S534, the read pointer is incremented by one and this subroutine is completed. On the other hand, when the text code is not indicative of a delimiting symbol (S533: NO), control goes to step S535 on the assumption that the name data has not yet been retrieved. In step S535, it is determined whether the text code retrieved in step S532 is a code suffixed on the body of the mail and

indicative of the end of the body of the mail (or whether retrieval of the text code was failed in step S532).

When the text code is determined to be a code indicative of the end of the body of the mail (S535: YES), control goes to step S536, where error handling is performed.

[0056]

When the text code is determined not to be a code indicative of the end of the body of the mail (S535: NO), the text data retrieved in step S532 is written into the name buffer 0 in step S537. Then in the step S538, the read pointer is incremented by one and, in step S539, the name buffer 0 write pointer is incremented by one. After that, control returns to step S532. By repeating these steps, text data representing the name desired by the consumer to be engraved is written into the name buffer 0 in the RAM 83 of the host computer 18.

[0057]

In the address retrieving step (step S54), the contents of the address buffer 0 in the RAM 83 are cleared in step S540, as shown in FIG. 10. Then in step S541, an address buffer 0 write pointer for indicating a data write point in the address buffer 0 is initialized. Then in step S542, the text code data at a point indicated by the read pointer is retrieved from the body of the mail. Then it is determined, in step 534, whether the text code is a code suffixed on the body of the mail and indicative of the end of the body of the mail (or whether retrieval of the text code was failed in step S542). When the text code is determined to be a code indicative of the end of the body of the mail (S543: YES), this subroutine is completed on the assumption that the address data has already been retrieved.

[0058]

When the text code is determined not to be a code indicative of the end of the body of the mail (S543: NO), the text data retrieved in step S542 is written into the

address buffer 0. Then in the step S544, the read pointer is incremented by one and, in step S546, the address buffer 0 write pointer is incremented by one. After that, control returns to step S542. By repeating these steps, text data representing the address desired by the consumer to be engraved is written into the address buffer 0 in the RAM 83 of the host computer 18.

[0059]

Then in the buffer laying-out step (step S55), it is determined whether "1" or "2" is written in the stamp type buffer in the RAM 83 of the host computer 18. When the stamp type is "1" (S550: YES), the name buffer 1 and the address buffer 1 in the RAM 83 are cleared in step S551, and then the contents of the name buffer 0 are written into the name buffer 1 in step S552, and the contents of the address buffer 0 are written into the address buffer 1 in step S553. On the other hand, when the stamp type is "2" (S550: NO), the name buffer 2 and the address buffer 2 in the RAM 83 are cleared in step S554, and then the contents of the name buffer 0 are written into the name buffer 2 in step S555, and the contents of the address buffer 0 are written into the address buffer 2 in step S556. In this way, the buffers are laid out and the mail editing step is completed.

[0060]

Two name buffers and two address buffers are used because, in this embodiment, the name and address engraving positions within the stamp face area are different, as shown in FIG. 15, depending on whether the stamp type is "1" or "2". When the stamp type is "1", a cartoon character is engraved near the left end of the stamp face area and the name and the address must be disposed away a certain distance from the left end. On the other hand, when the stamp type is "2", a cartoon character is engraved near the right end of the stamp

face area and the name and the address must be disposed away a certain distance from the right end.

[0061]

Then control goes back to step S6 of FIG. 5, where the data edited in step S5 is supplied to the stamp producing device 19. More specifically, the contents of the stamp type buffer, the contents of the name buffer 1 or 2, whichever is updated more recently, and the contents of the address buffer 1 or 2, whichever is updated more recently are transmitted to the stamp producing device 19 as the stamp producing data.

[0062]

The stamp producing device 19, in turn, receives the stamp producing data from the host computer 18 and stores it in the RAM 93. The CPU 91 generates dot matrix data for engraving the stamp face by referring to font data of letters and a cartoon character stored in the ROM 92, based on the stamp producing data stored in the RAM 93, and stores the generated dot matrix data in an image buffer in the RAM 93. Then the stamp 20 (FIG. 17) having a desired engraved stamp face as shown in FIG. 16 is produced by the thermal head 26 and the motors 98 driven based on the dot matrix data.

[0063]

Then in step S7, the stamp 20 is provided to the consumer cash on delivery. In this case, it is preferable that the consumer's cellular phone number is checked to avoid the mismatch between the stamp ordered from the consumer and the stamp to be delivered. It is more preferable that the stamp providing system 1 in this embodiment is provided with an automatic delivery device of produced stamps. An automatic delivery device ejects, in response to payment by the consumer of a prescribed stamp fee and an entry of the consumer's cellular phone number, a stamp corresponding to the entered phone number. Use of such a device can prevent a shop

attendant from delivering a wrong stamp to the consumer due to a mistake in checking the phone number. The consumer may go to the installation site of the stamp producing device 19 to get the stamp 20, or may get, at home, the stamp 20 sent by mail.

[0064]

As described above, according to this embodiment, when the consumers want to order the stamp 20 having a desired stamp face, all they have to do is to send desired data using the cellular phones 12a-12d, instead of taking the trouble to go to the installation site of the stamp producing device 19 and enter data to be engraved in the stamp or fill out an order form. Accordingly, the time and trouble taken by the consumers 11a-11d to order the stamp 20 can be substantially saved. Also, automatic production of stamps based on the data transmitted from the consumers 11a-11d substantially saves the stamp provider the trouble of entering the data filled in the order form and enables the stamp provider to receive orders from distant consumers.

[0065]

Also, in this embodiment, because stamp producing data is generated and transmitted using the cellular phones 12a-12d, the consumers 11a-11d can order a stamp conveniently from various locations, at home and away from home, in their spare time.

[0066]

Also, in this embodiment, because a plurality of cellular phones 12a-12d can be identified using the phone numbers assigned thereto, a sender's cellular phone can be easily identified from the data received. Additionally, stamps can be produced based on personal information, such as the name and the address of the consumers 11a-11d.

[0067]

Although, in this embodiment, the stamp type together with the name and the address are sent by e-mail to the host computer 18, only the name and the address may be sent by e-mail to the host computer 18 and then the stamp type may be designated later when a customer goes to the site where designs are shown. Such a method is effective when stamp design samples cannot be printed previously in the brochure 101 in FIG. 12 due to frequent stamp design changes. Previous transmission of all the data necessary for producing a stamp from a cellular phone, as shown in the embodiment, allows a consumer to get a stamp with less trouble and waiting time.

[0068]

A stamp providing system according to a second embodiment of the invention will now be described with reference to FIG. 18, which is a schematic block diagram showing the second embodiment. In this embodiment, a cellular phone, instead of a public line and a modem used in the first embodiment, is connected to the host computer and used as a data receiver. In a stamp providing system 2 shown in FIG. 18, a stamp 20 is produced from a thermoplastic porous material by a stamp producing device 19 located distant from a number of consumers (only four consumers 11a-11d are shown here by way of example), based on stamp producing data transmitted over the air from the consumers' respective cellular phones 12a-12d.

[0069]

Text data is sent from the cellular phones 12a-12d in the form of e-mail to a cellular phone 12e connected to the host computer 18. More specifically, text data sent over the air from the cellular phones 12a, 12b is sent from a base station 13a of each cellular phone service company to the cellular phone 12e located within a territory of the base station 13a. Text data sent over the air from the cellular phone 12c is sent from a base

station 13b, via a cellular phone switching station 14a and the base station 13a, to the cellular phone 12e. Text data sent over the air from the cellular phone 12d is sent from a base station 13c, via a cellular phone switching station 14b, another cellular phone switching station 14a, and the base station 13a, to the cellular phone 12e (in this embodiment, a cellular phone connection adapter 89, instead of the modem 17, may be connected to the I/O interface 84, as shown in FIG. 4).
[0070]

The e-mail received by the cellular phone 12e is stored in its RAM 63 and retrieved into the host computer 18 using a mail retrieving program stored in the cellular phone. Then the e-mail is stored in a RAM 83. After that, the stamp 20 is produced according to the same steps as in the first embodiment and provided to a consumer.
[0071]

Using a wireless receiver (preferably a cellular phone) as a data receiver, as shown in this embodiment, allows the host computer 18 and the stamp producing device 19 to be installed in locations, within the cellular phone service area, where connection with a public line is hardly established. Accordingly, the installation sites of these devices can be selected more freely and the environment for the host computer 18 to receive data can be built at a lower cost.
[0072]

While the invention has been described in connection with specific embodiments thereof, it should be understood that the invention is not limited to the above-described embodiments and various modifications can be made without departing from the scope of the invention as defined in the claims. For example, if a name card producing device, instead of the stamp producing device, is connected to the host computer 18, a stamp providing

system can be configured. Also, CDs (compact discs) in which voice is recorded can be provided using a voice data recorder, or stickers with an image printed thereon can be provided using a device for producing a sticker upon receipt of image data.

[0073]

Although, in the embodiments, the e-mail system where e-mail is automatically sent to the host computer 18 is described by way of example, another e-mail system can be used, where e-mail is stored in a mail server separate from the host computer 18 and is received by the host computer 18 by access to the mail server. Also, in the above-described embodiments, the number of entry items and the types of the stamp designs can be arbitrarily changed.

[0074]

[Effect of the Invention]

As described above, according to claims 1 and 6, the time and trouble taken by the consumer to order an output can be substantially saved. Also, production of an output based on the data transmitted from the consumer substantially saves an output provider the trouble of entering the data and enables the stamp provider to smoothly receive orders from distant consumers. Because the output producing data is generated and transmitted using a wireless data transmitter, the consumer can order an output conveniently from various locations, at home and away from home, in his/her spare time.

[0075]

Additionally, according to claim 2, because a plurality of wireless data transmitters can be identified using an identification number assigned to each of the wireless data transmitters, the sender's wireless data transmitter can be easily identified from the data received. According to claim 3, an output, such as a stamp and a name card, can be produced based on personal

information, for example, the consumer's name, address, and telephone number. According to claim 4, because a data receiver is a wireless receiver, the installation site of the data receiver is selected more freely and the environment for the data receiver to receive data can be built at a lower cost.

[Brief Description of the Drawings]

[FIG. 1]

FIG. 1 is a schematic diagram showing a configuration of a stamp providing system according to a first embodiment of the invention.

[FIG. 2]

FIG. 2 is a general perspective view of a stamp producing device shown in FIG. 1.

[FIG. 3]

FIG. 3 is a general cross-sectional view of the stamp producing device shown in FIG. 1.

[FIG. 4]

FIG. 4 is a block diagram showing a control system of the stamp providing system according to the first embodiment of the invention.

[FIG. 5]

FIG. 5 is a main flowchart showing stamp providing steps in the first embodiment of the invention.

[FIG. 6]

FIG. 6 is a flowchart showing an e-mail editing process in FIG. 5 executed by a host computer.

[FIG. 7]

FIG. 7 is a flowchart of an initialization subroutine in the e-mail editing process of FIG. 6.

[FIG. 8]

FIG. 8 is a flowchart of a stamp type retrieving subroutine in the e-mail editing process of FIG. 6.

[FIG. 9]

FIG. 9 is a flowchart of a name retrieving subroutine in the e-mail editing process of FIG. 6.

[FIG. 10]

FIG. 10 is a flowchart of an address retrieving subroutine in the e-mail editing process of FIG. 6.

[FIG. 11]

FIG. 11 is a flowchart of a buffer laying-out subroutine in the e-mail editing process of FIG. 6.

[FIG. 12]

FIG. 12 shows an example of a brochure to be previously supplied to consumers in the first embodiment of the invention.

[FIG. 13]

FIG. 13 shows an example of transmission data displayed on a display of a cellular phone.

[FIG. 14]

FIG. 14 shows a screen of mail editing software displayed on a display of the host computer.

[FIG. 15]

FIG. 15 shows a difference, in name and address buffer layouts, between two types of stamp face designs.

[FIG. 16]

FIG. 16 shows an example of a stamp face layout produced according to the first embodiment of the invention.

[FIG. 17]

FIG. 17 is an external perspective view of a stamp produced according to the first embodiment of the invention.

[FIG. 18]

FIG. 18 is a schematic diagram showing a configuration of a stamp providing system according to a second embodiment of the invention.

[Description of the Reference Numerals]

1 stamp providing system
11a-11d customers
12a-12d cellular phones
13 base station

14 cellular phone switching station
17 modem
18 host computer
19 stamp producing device
20 stamp

[Title of the Document] Drawings

[FIG. 1]

[Document Name] Abstract

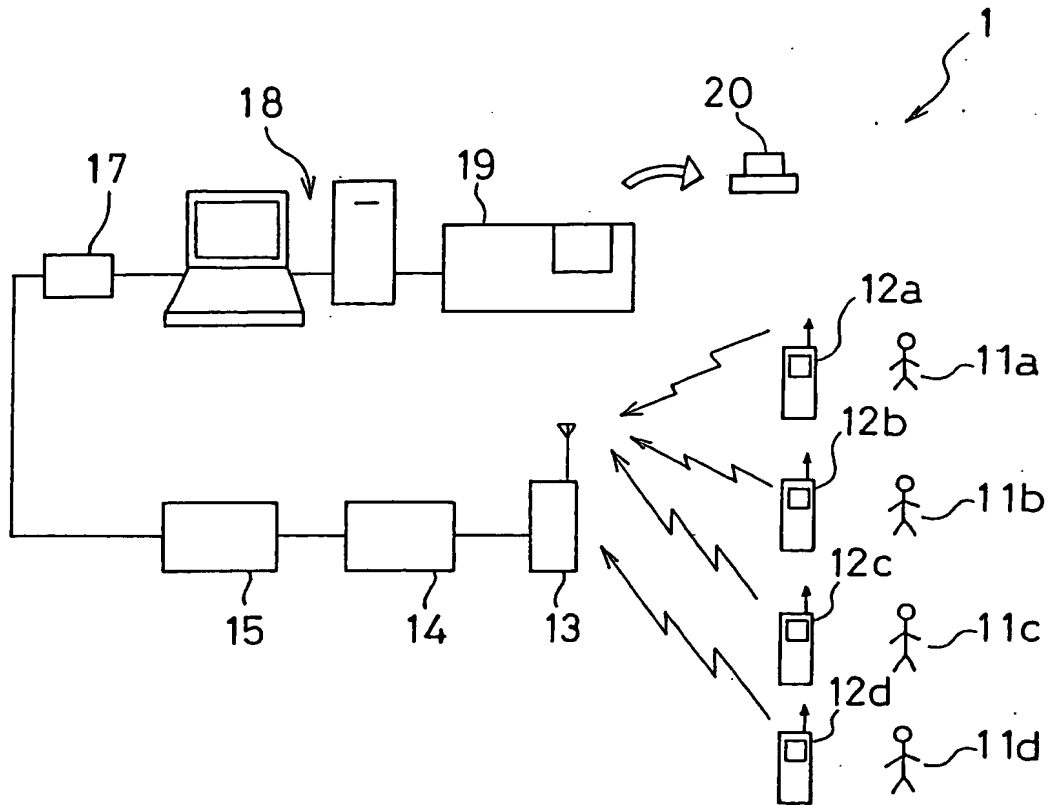
[Abstract]

[Problem to be Solved] To enable customers to order a tangible output, such as a name card and a stamp, at less expense in time and trouble.

[Solution] Customers 11a-11d operate their own cellular phones 12a-12d to send information to be engraved in a stamp in the form of e-mail to a host computer 18. The host computer 18 edits the information and send stamp producing data to a stamp producing device 19. The stamp producing device 19 produces a stamp 20 based on the received data.

[Selected Figure] FIG. 1

Fig.1



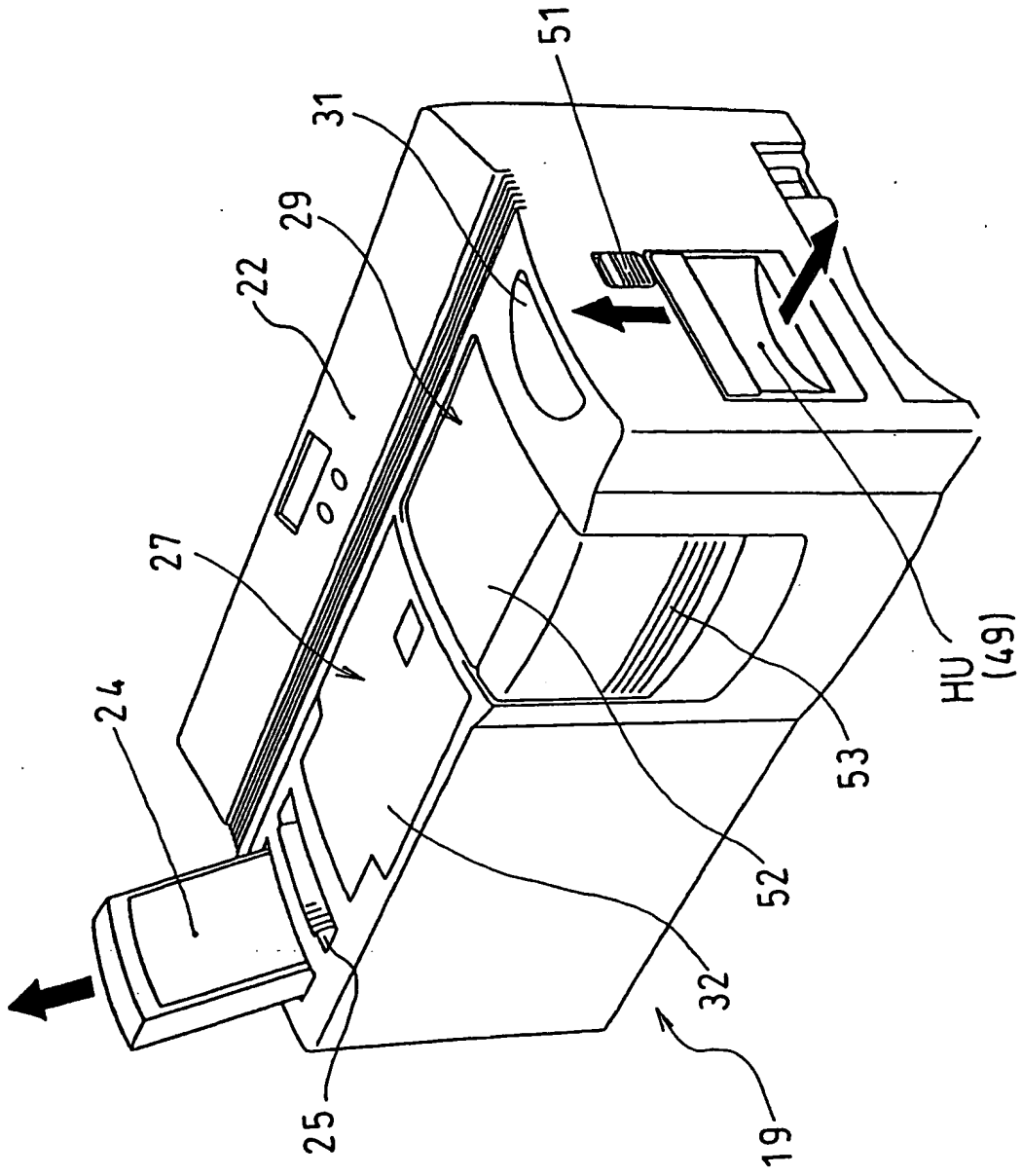


Fig. 2

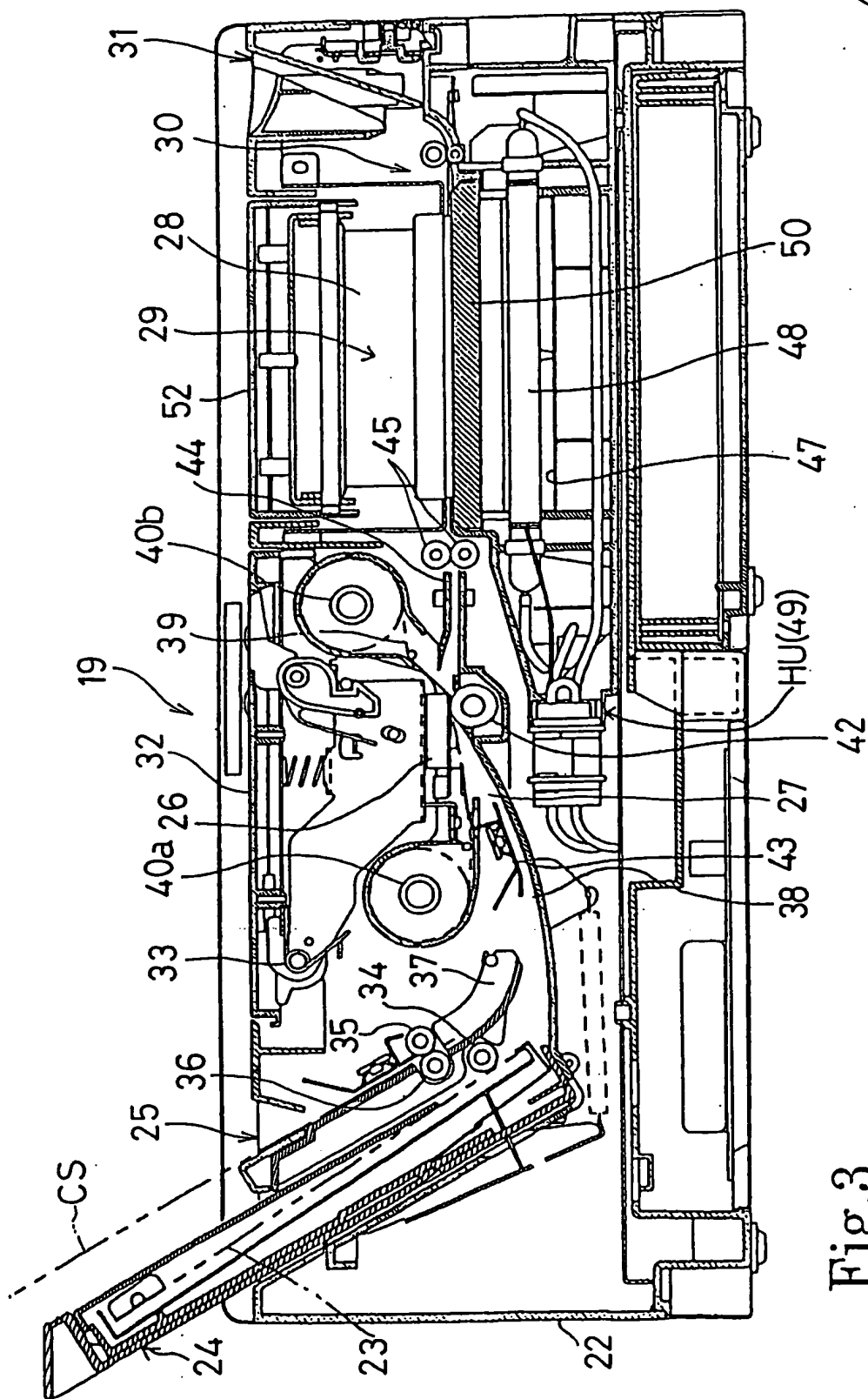


Fig.3

Fig. 4

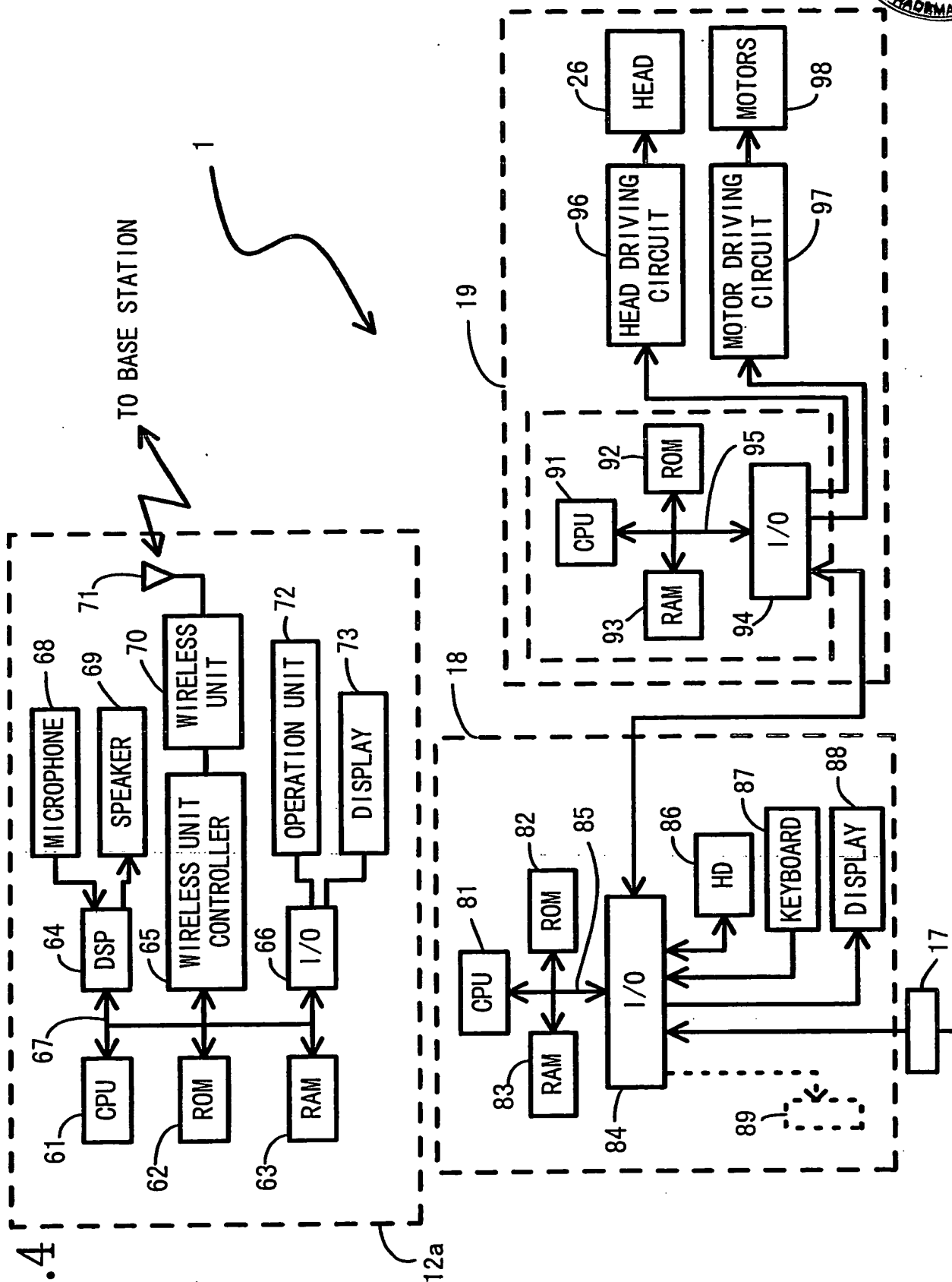


Fig.5

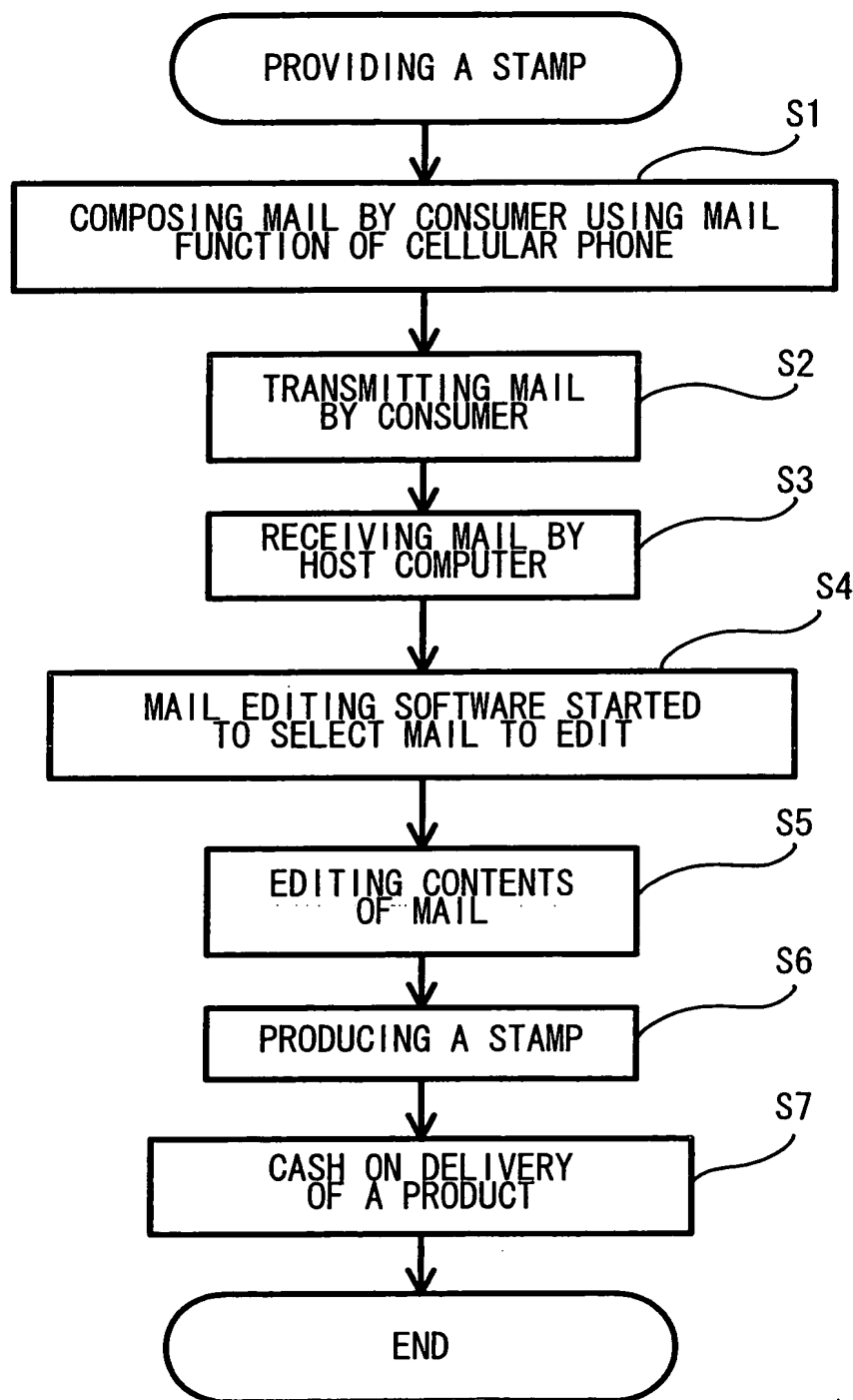


Fig.6

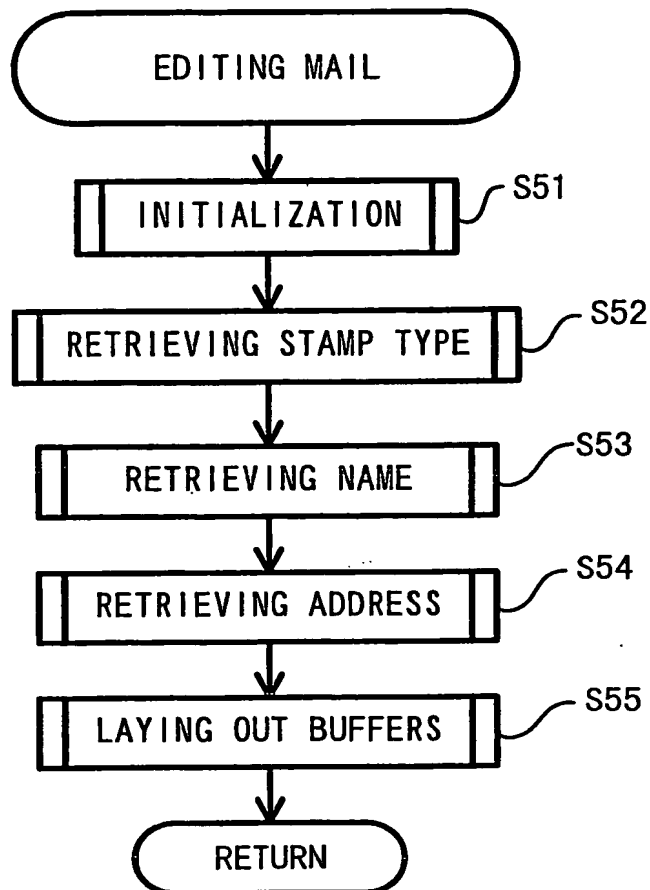


Fig.7

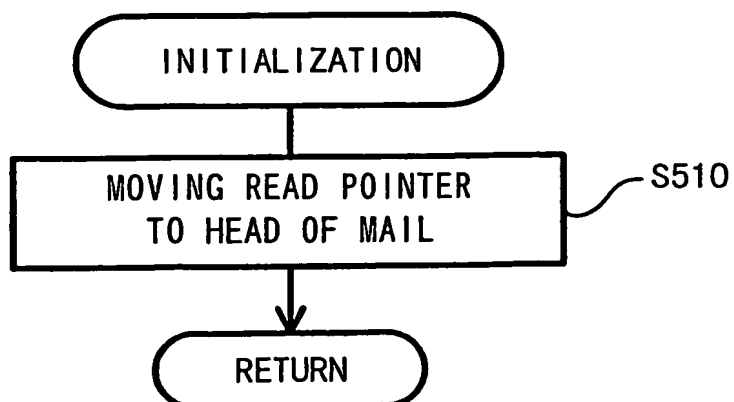


Fig. 8

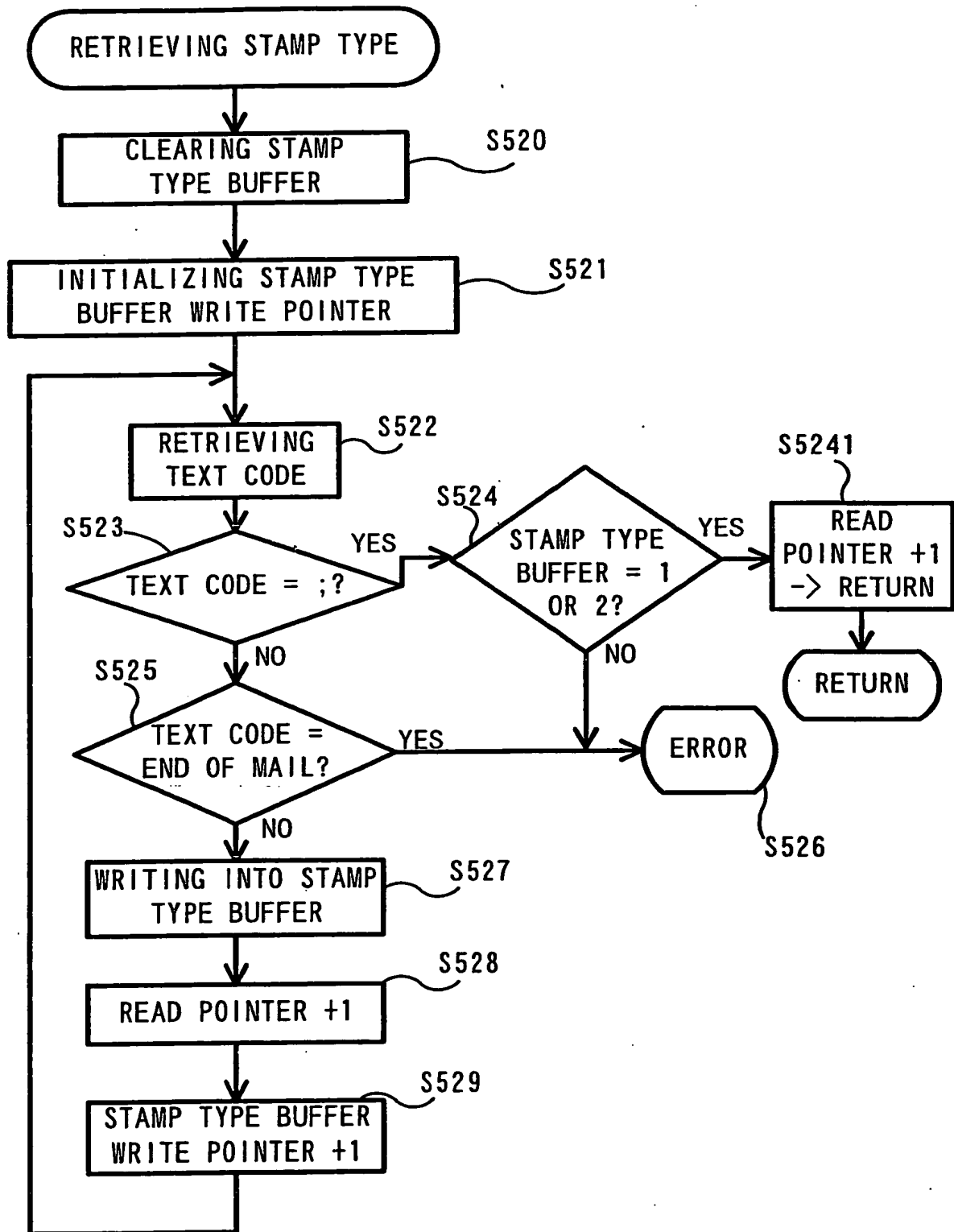


Fig. 9

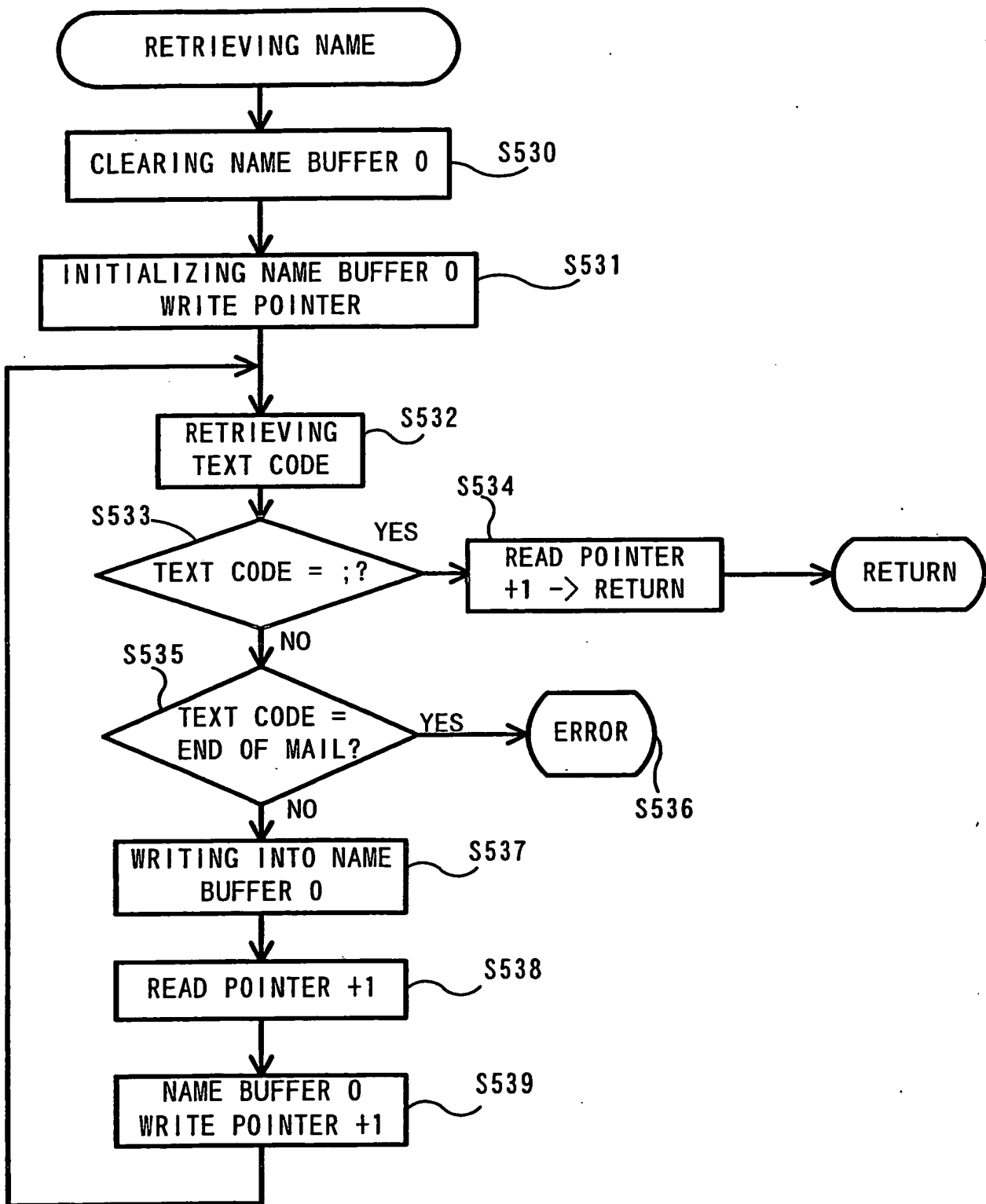


Fig.10

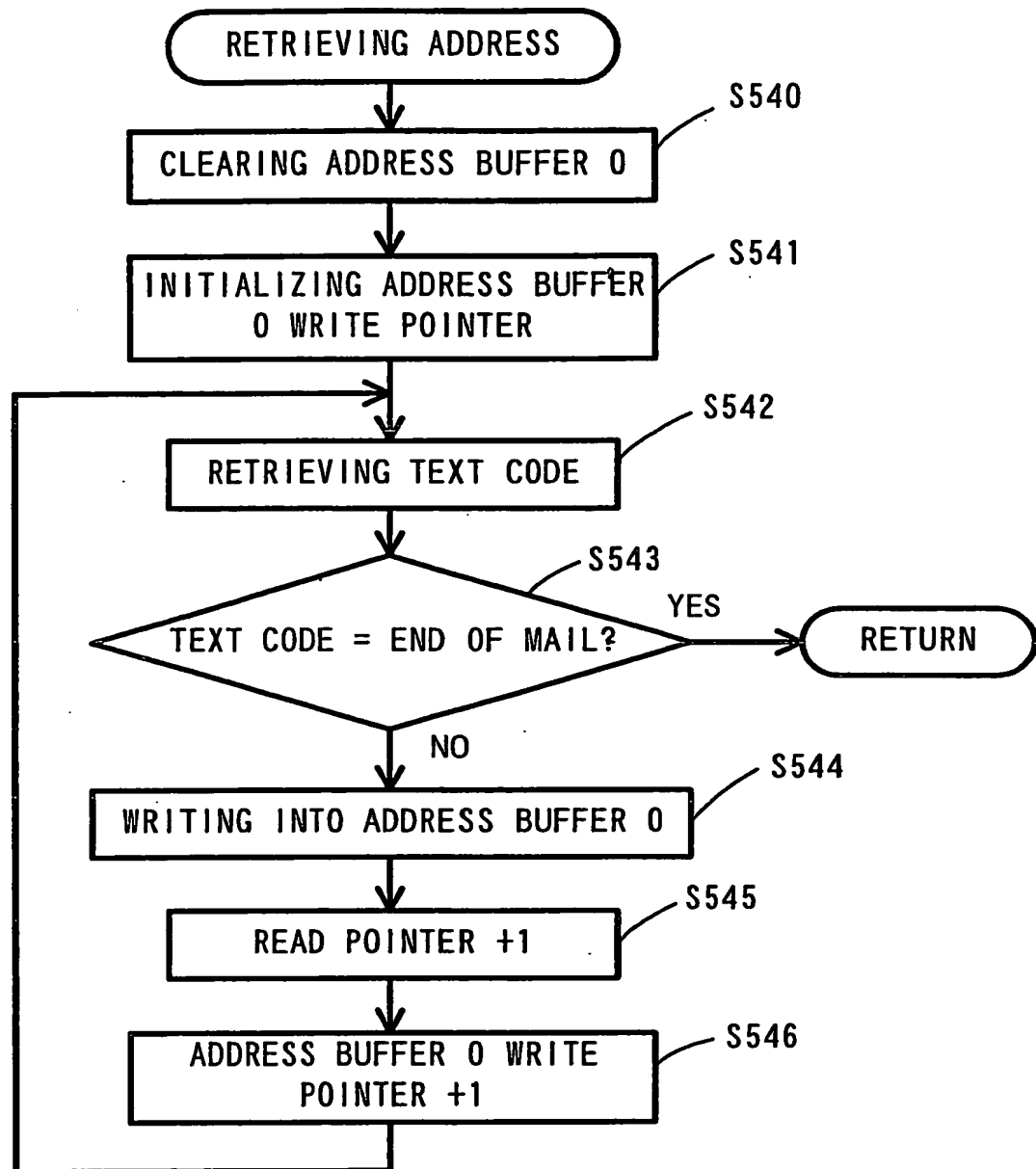


Fig.11

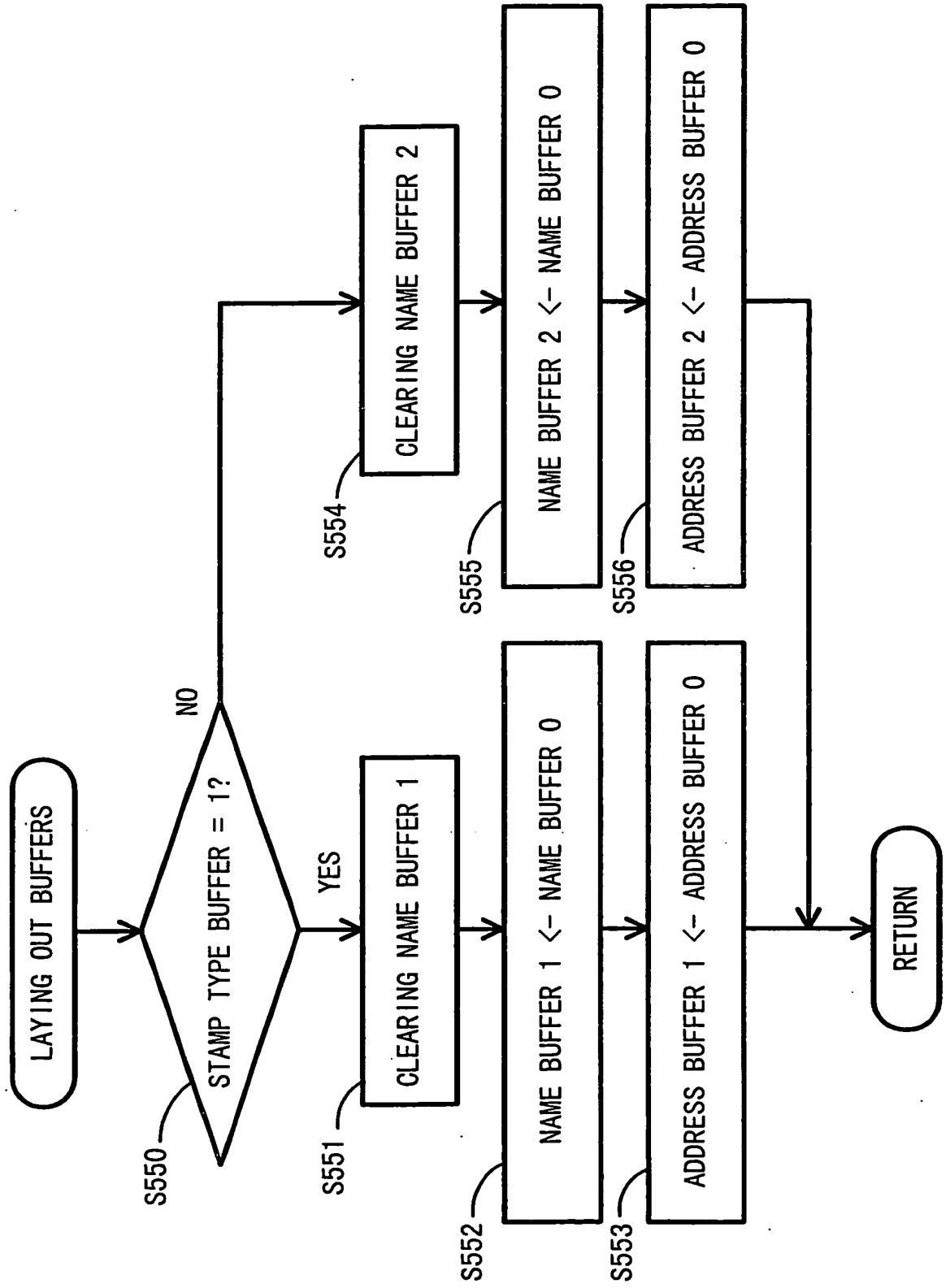


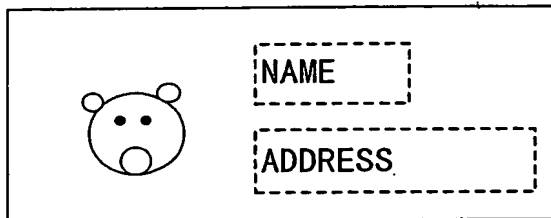
Fig. 12

101

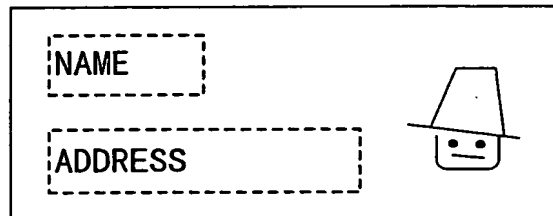
HOW TO WRITE MAIL TO ORDER A STAMP

Enter the stamp type, name, and address in this order by delimiting each entry item by semicolon.

STAMP 1



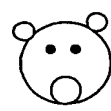
STAMP 2



EXAMPLE OF ENTRY:

1; TARO SUZUKI;
1-2-3 XX,
^^-KU, NAGOYA

If mailed,



TARO SUZUKI
1-2-3 XX, ^^ -KU, NAGOYA

Your stamp will be:

Please send your mail to: 090-1234-5678

Fig. 13

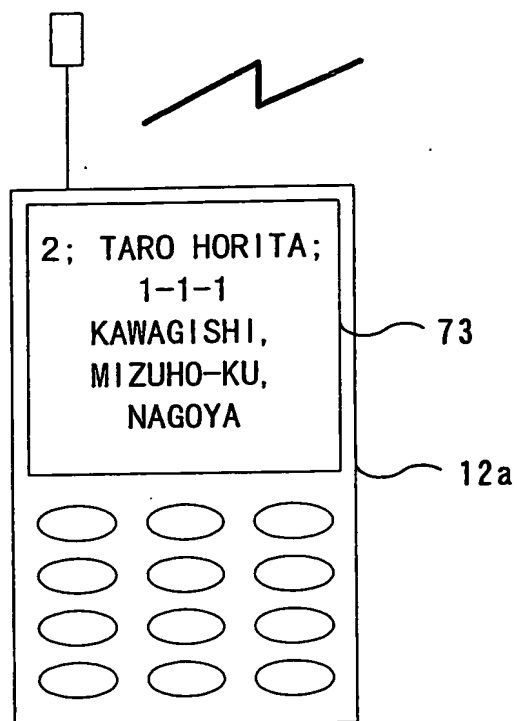
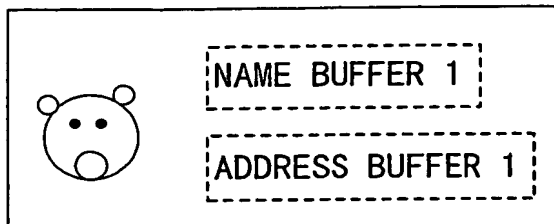


Fig. 14

MAIL EDITING SOFTWARE		
No.	TITLE	TEL
1	STAMP ORDER	090-7777-8888
2		
3		
4		
5		

Fig. 15

STAMP 1



STAMP 2

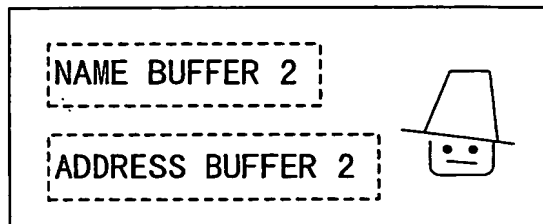


Fig. 16

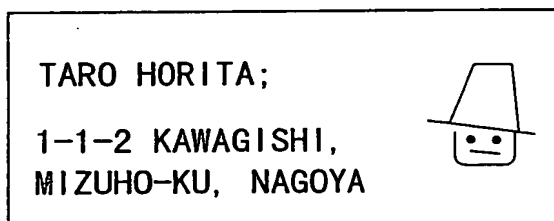


Fig. 17

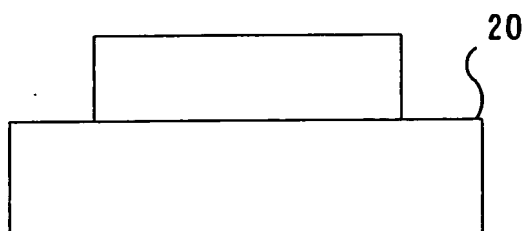


Fig.18

